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NAVAL MEDICAL SURVEILLANCE REPORT

NMSR

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From the Population Health Director

CAPT Bruce K. Bohnker, MC, USN (FS)

After a cool and cloudy spring, the summer is upon us in Portsmouth with hot, muggy days being the norm. We have greeted the return of many Sailors and Marines who supported Operation Iraqi Freedom to Norfolk, and warmly welcomed the deployed NEHC personnel and family members. We have also settled in after the change of command. This seems to be the season of military and civilian retirements here at NEHC, with many familiar faces being honored as they go ashore for the last time.

A number of issues have become very prominent recently. The Secretary of Defense has clearly defined his priorities for reducing Lost Work Days across the services. This supports a number of Navy Medicine initiatives on reducing sports injuries in the Navy and Marine Corps recruit training bases, as well as better injury surveillance. We have been supporting a Department of the Navy Integrated Process Team (IPT) on Fitness and Wellness which will provide multiple avenues for improved coordination and cooperation. We have been involved with the BUMED Population Health IPT, which is prioritizing population health initiatives across Navy Medicine. In the more familiar preventive medicine arena of infectious disease response, we have been continuing to investigate Methicillin Resistant Staph Aureus (MRSA) at recruit training bases, and recently published the Annual Tuberculosis report. The Post Deployment Health Assessment (PDHA) process has generated considerable interest and is prominently displayed on the NEHC Population Health web page. That area continues to require careful attention and compassionate care from our Navy Medicine health care professionals.

We look forward to the US Army Force Health Protection Conference in Albuquerque during August, where the NEHC PH staff will have a number of presentations highlighting our accomplishments for the past year. We also are putting together the plans for the NEHC Annual Workshop which will be in Chesapeake, VA, 18 through 26 March 2004. CAPT McGinnis will again be the workshop director and is busy putting together a most professional program.

Finally, we honor the Sailors and Marines who are responding to the President's call to be ready. We proudly salute the Soldiers, Sailors, Marines and Airmen who continue to sacrifice so much for this great country.

Navy Medical Surveillance Report

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Goals for Sexual Health - Supporting Healthy People 2010

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An important and longstanding goal of Navy Medicine and of the Marine Corps' *Semper Fit* program is to reduce the negative consequences of sexual behavior, specifically unplanned pregnancies and sexually transmitted infections (STIs) including Human Immunodeficiency Virus (HIV) infection. Unplanned pregnancies and STIs reduce the readiness of the force, decrease quality of life, and inflict preventable morbidity within the Navy and Marine Corps force and family.

The Sexual Health and Responsibility Program (SHARP) of the Navy Environmental Health Center's (NEHC) Directorate of Population Health provides Navy and Marine Corps personnel and their families with health information, education, and behavior change programs to prevent unplanned pregnancies and STIs. The SHARP vision is a *cultural norm in which sexual responsibility and safety is encouraged, supported, and expected, and a population in which all pregnancies are planned, Syphilis is eliminated, and other STDs, including HIV, are prevented.*

The SHARP goal is to reduce the occurrence of HIV, STDs and unplanned pregnancies among members and beneficiaries to levels specified in selected *Healthy People 2010* objectives.

Healthy People 2010 provides a set of health objectives for the Nation to achieve over the first decade of the new century.[1] These objectives were developed through a broad consultation process, are based on the best scientific knowledge, and are designed to measure programs over time. Nationally, 44 specific Family Planning, HIV prevention and STD prevention objectives are included. From these, SHARP has initially adopted 13 objectives, based on their applicability to the active duty force, measurability and feasibility, and consistency with Naval policy. SHARP also developed 5 additional objectives for health care provider training and population education. These 18 "SHARP" objectives are summarized in Figure 1. For each objective, SHARP sought data from available Naval sources. Where possible, *Healthy People 2010* targets were adopted. However, some of the national objectives are classified as "developmental" and have no targets. For these, SHARP has established targets based on consensus and "best of the best" principle. For example, regarding new HIV infections, the SHARP target is "not more than 8 new infections per 100,000 members tested". This is based on the lowest incidence rate yet observed among any of the active duty forces (U.S. Marines in 1998).

Other examples of "developmental" objectives are to increase the proportion of health care providers who provide emergency contraception and increase the proportion of females aged 25 and under screened for chlamydia. Since guidance for these activities are already contained in Navy policy, SHARP established high (90%) targets. Of the 13 SHARP-adopted *Healthy People 2010* objectives, the Navy and Marine Corps fall short in four (syphilis, gonorrhea, unplanned pregnancy, and condom use). Data are presently lacking to measure achievement of the remaining objectives.

Although direct comparisons between active duty members and the general population may not be ideal, the adoption of specific program objectives and targets makes it possible to measure our progress and make evidence-based adjustments. These targets may also provide focus for all

stakeholders in a multidisciplinary effort among primary care providers, Independent Duty Corpsmen, nurses, preventive medicine professionals, health promoters, volunteer/peer educators, school nurses, family service counselors, and leaders.

Moving toward these objectives requires ongoing support from Navy Medicine leaders. A subset of these SHARP Objectives were launched as "Voluntary Sexual Health Performance Criteria" for Military Treatment Facilities (MTFs) and other commands with medical capabilities.[2] To assist MTFs with the application and evaluation of these criteria, SHARP also developed a "provider survey form" for ease of local data collection. The "MTF Criteria" and "provider survey" may be downloaded in a single file from the SHARP website (http://www-nehc.med.navy.mil/hp/sharp/index.htm).

Initial feedback from MTFs is positive and indicates the tools raise awareness among Navy medical professionals regarding existence of these standards of care and objectives. These criteria have subsequently become integrated into the NEHC *Excellence in Health Promotion Award*, which is awarded annually to outstanding medical and non-medical commands.
SHARP also provides a wide range of classroom and self-study training opportunities for health professionals and peer educators as well as consultation and site visits. Complete information about SHARP, is available on their website.

As Navy Medicine continues to enhance the health and well-being of our beneficiaries, we must strive to attain the goals of Healthy People 2010. Improving the sexual health of those entrusted to care remains a significant component in that effort.

References

1. U.S. Department of Health and Human Services (2002). Healthy People 2010: Understanding and Improving Health. 2nd ed. Washington, DC: U.S. Government Printing Office, November 2000.

2. Sexual Health and Responsibility Program. "Sexual Health Performance Criteria: How is Your Command Doing?" SHARPNews. 4 (2); June 2002.

Figure 1.

Sexual Health Objective (and HP2010 Objective Number)	HP2010 Target	U.S. Baseline and DoN Status	SHARP target	DoD/DoN Requirement
Family Planning				
9-1. Increase the proportion of **pregnancies** that are intended	70%	U.S. = 51%. 1999 Navy enlisted = 40%; Navy Officer = 79%. USMC data not available.	70%	supports MANMED (page 15-69)
9-3: Increase the proportion of females at risk of unintended pregnancy (and their partners) who use **contraception**	100%	U.S. = 93% in 1995	100%	supports MANMED (page 15-69)
9-5: Increase the proportion of health care providers who provide **emergency contraception (ec)**	developmental	Developmental. Note: in 1999, 16% of Navy women and 8% of Navy men were aware of EC at MTFs	90%	MANMED (page 15-69)
HIV				
13-5: Reduce the number of **HIV cases** among adolescents and adults	developmental	U.S. = developmental. DoN = 101 adult active duty cases in 2001 (20 per 100K tested)	8 per 100K	DoDI 6485.1
13-6: Increase the proportion of sexually active adults who use **condoms**	50%	U.S. = 23% among females in 1995. Navy = 39% and USMC = 42% in 1998	50%	supports BUMED Inst 6222.10A
STD Prevention				
25-1a-c: Reduce incidence of **Chlamydia** among males and females aged 15-24	3%	U.S. = roughly 5-15% in 2001 (278/100K). DoN: prev. unk. CY02 incidence/100K: USN=454; USMC=647.	3% (3000/100K)	OPNAVINST 6120.3
25-2: Reduce incidence of **Gonorrhea**	19 per 100K	CY01 U.S. = 128.5/100K in 2001. CY02 USN=398 cases (104/100K). CY02 USMC=214 cases (123/100K)	19 per 100K	supports BUMED Inst 6222.10A
25-3: Eliminate sustained domestic transmission of primary and secondary **Syphilis**	0.4 per 100K	CY01 U.S. = 2.2. CY02 DoN = 2.9	0.4 per 100K	supports BUMED Inst 6222.10A
25-6: Reduce the proportion of females who have ever required treatment for pelvic inflammatory disease (**PID**)	5%	U.S. = 8% in 1995	5%	supports BUMED Inst 6222.10A
25-9: Reduce **congenital syphilis**	1 per 100K live births	U.S. = 11.1 per 100K live births in 2001	1 per 100K live births	supports BUMED Inst 6222.10A
25-13: Increase proportion of STD programs that routinely offer **Hep B vaccine** to all STD clients	90%	U.S. = 5%	90%	BUMED Inst 6222.10A
25-16: Increase proportion of sexually active **females aged 25 and under screened annually for Chlamydia**	developmental	developmental	90%	OPNAVINST 6120.3
25-18: Increase proportion of primary care providers who **treat** STDs in accordance with recognized standards	90%	U.S. = 70% in 1998	90%	BUMED Inst 6222.10A
(SHARP) Increase proportion of providers who **assess sexual risk** behavior during routine outpatient encounters	none	U.S. range: 28-50%	90%	OPNAVINST 6120.3; Tricare/CHAMPUS Policy manual 6010.47-M
Provider Training				
(SHARP) Increase proportion of primary care providers (PCP), health promotion specialists (HPS), preventive medicine technicians (PMT), environmental health officers (EHO) and independent duty corpsmen (IDC) who have completed **training** in **client-centered HIV/STD prevention counseling**	none	N/A	Minimum = one assigned PCP, HPS, EHO, and IDC plus 33% of assigned PMTs	supports achievement of OPNAVINST 6120.3
(SHARP) Increase proportion of primary care providers and IDCs who have completed **training** in **sexual risk assessments** in the outpatient setting	none	N/A	33%	supports achievement of OPNAVINST 6120.3
(SHARP) Increase proportion of primary care providers, health promoters, health educators, PMTs and IDCs who have completed on-going **self-study training in sexual health**	none	N/A	Minimum = one assigned PCP, HPS, EHO, and IDC plus 33% of assigned PMTs	supports achievement of SECNAVNOTE 5300
Population Education				
(SHARP) Increase the number of supported commands to which each MTF provided **general sexual responsibility training** (outreach)	none	N/A	Minimum = one other Command per year	SECNAVNOTE 5300

Suspected Meningococcal Meningitis On An Aircraft Carrier

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Introduction

Military personnel living in close quarters constitute a population at particularly high risk for developing bacterial meningitis caused by *Neisseria meningitidis*. Though rare, it is a significant source of morbidity and mortality among young adults. Described is a case of suspected meningococcal meningitis that occurred in a young, active duty male aboard a deployed U.S. Navy ship, its management and the strategies employed by the ship's medical department to diagnose, treat and contain the illness.

Case Report

The aircraft carrier was in the mid-Atlantic Ocean returning from deployment, and shipboard Medical Personnel were called to evaluate a 24-year old male in his berthing area. He was found to have a blood pressure of 86/52 and pulse of 130, and was transported immediately to the ship's medical department. He reported symptoms of a common cold for the prior four to seven days and complained of headache and photophobia. Past medical history was unremarkable. He had received the meningococcal vaccine during recruit training three years previously. Recent immunizations were the influenza vaccine and Vi capsular polysaccharide typhoid vaccine 26 days prior to admission. His only chronic medication was Centrum multivitamins. He received acetaminophen, pseudoephedrine, guaifenesin, and Cepacol lozenges for his cold symptoms four days prior to admission. He denied taking dietary supplements and ibuprofen or other non-steroidal anti-inflammatory drugs. He did not smoke. Temperature was 101^0F, with physical exam findings notable for petechial rash, meningismus and positive Kernig's and Brudzinski's signs. A presumptive diagnosis of bacterial meningitis was made based on these findings.

Intravenous fluid hydration with normal saline was initiated with respiratory droplet isolation. Within an hour of the patient's initial presentation, Ceftriaxone, 2gm IV was administered and a lumbar puncture was subsequently completed. Cerebrospinal fluid (CSS) analysis showed cloudy fluid with many neutrophils, and no organisms on gram stain. White blood cell count was 28,500. IV vancomycin was added to the antibiotic regimen approximately 3 hours after presentation, as the gram stain did not establish *N. meningitidis* as the etiologic agent. Twenty-four hours later, the patient was afebrile with a normal blood pressure. The CSF culture showed no growth after 24 hours. IV ceftriaxone and vancomycin were continued and respiratory droplet isolation was discontinued. By 48 hours after presentation, the patient had 90% improvement of his meningismus and remained afebrile. The CSF culture grew a possible colony which was subplated, however, the gram stain was non-diagnostic. Three days after presentation, the patient was afebrile, ambulatory and had complete resolution of his meningismus and his antibiotic regimen was changed to a daily dose of penicillin G, 24 million units. CSF showed no growth after 96 hours on the original culture plate and the sub-plate. Six days after presentation, the patient continued to be afebrile and asymptomatic. He completed a total 6-day course of antibiotics and was discharged after taking a 500mg dose of ciprofloxacin to eradicate possible meningococcal nasal colonization.

After the ship returned to port, the original CSF sample was sent to the tertiary care hospital for further studies. Repeat gram stain showed no organisms and culture showed no growth. Bacterial antigens by latex agglutination were negative for *Neisseria meningitidis*, *Haemophilus influenza* type B, *Streptococcus pneumoniae*, and *Streptococcus agalactiae*.

Discussion

Meningococcal meningitis occurs in 0.6 people per 100,000 per year in the United States and is the leading cause of bacterial meningitis in the 2-18 year age group.[1] Mortality due to meningococcal meningitis is 3%, but rises to 17% if bacteremia is present.[1] People at higher risk for developing meningococcal meningitis include those with immunodeficiency states such as complement deficiency, asplenia, and human immunodeficiency virus infection, as well as people living in close, crowded conditions such as military recruits, college students in dormitories and people of low socioeconomic status.[2,3]

N. meningitidis bacteria are carried in the human nasopharynx, and transmission occurs through aerosol or secretions. Asymptomatic carriage occurs in about 10% of the general population, but rates may be as high as 40-80% in military populations.[4,5] Cigarette smoking and other conditions that impair the ability of the mucociliary barrier to prevent systemic invasion of microorganisms are believed to increase the risk of infection.[6] The patient described was at increased risk due to his close living quarters on the ship and a coexistent upper respiratory infection. While he had received the meningococcal vaccine 3 years prior to presentation, this would not have prevented disease due to *N. meningiditis* serotype B infection or other pathogens.

A definitive diagnosis of meningococcal meningitis was not obtained in this case. The epidemiology, petecchial rash, profound CSF pleocytosis, and the rapid response to antibiotics make bacterial meningitis secondary to meningococcus the most likely etiology. Barriers to diagnosis included the administration of one dose of antibiotics prior to lumbar puncture and the limited laboratory capabilities onboard the ship. However, the potentially devastating consequences associated with bacterial meningitis necessitate quick and aggressive treatment, which was done before lumbar puncture was performed. The ship's medical officers relied on clinical acumen and judgment to manage the case effectively. Broad empiric antibiotic coverage was initially chosen, then tailored to the patient's clinical response. Shipboard practitioners, without the luxury of sophisticated laboratory technology at their disposal, must often use their clinical skills alone to manage patients.

Prompt initiation of recommended public health measures by the ship's medical department led to successful containment of the spread of disease. Respiratory droplet isolation was implemented immediately once the diagnosis of bacterial meningitis was entertained. Isolation was continued for the first 24 hours of antibiotic therapy, consistent with current recommendations by the American Public Health Association.[7] The ship's medical department also identified the patient's close contacts and initiated prophylactic therapy in those contacts.

A close contact is defined by the Centers for Disease Control (CDC) as a household member, a day care center contact, or anyone directly exposed to the patient's oral secretions.[8] In this case, close contacts on the ship were defined as: any person having close contact with the patient for greater than 4 hours in a day over the previous 7 days, all personnel living in the same berthing area, all personnel from the same work center and all personnel who stood watches with the patient. In addition, close friends who spent more than 4 hours per day with the patient on the ship or during a port visit to Portsmouth, England, the week prior to presentation, were included as contacts.

Based on these criteria, 99 ship's personnel were identified as close contacts. Current recommendations are to treat close contacts within 24 hours after the case is identified with a standard protocol of rifampin, ciprofloxacin, or ceftriaxone.[8] Directly observed therapy (DOT) with oral rifampin, 600 mg twice daily for 2 days (first dose given less than 6 hours after patient presented) was administered to all 99 personnel identified as close contacts, in accordance with these guidelines. A retrospective analysis shown in Table 1 demonstrates that one dose of ciprofloxacin 500 mg would have been more cost effective than rifampin for chemoprophylaxis;

however, the four DOT doses of rifampin enabled the medical department to observe all of the contacts on four occasions for the presence of meningococcal symptoms. In addition, the patient reported a history of intimate contact with a local woman during the port visit to Portsmouth, England. This information was relayed to the English public health authorities within 24 hours after the patient presented. No cases of meningitis occurred in the patient's close contacts or other members of the ship's crew.

Although the case occurred while the ship was crossing the Atlantic Ocean, rapid communication with the ship's chain of command and Navy public health officials contributed to the effective management of the incident. Public health officials at Navy Environmental and Preventive Medicine Unit No. 2 (NEPMU2) were notified via telephone call within 5 hours after the patient first presented. NEPMU2 further alerted the local civilian health department and the area Military Treatment Facility. The ship's medical officer issued daily situational reports via electronic mail to keep all concerned parties updated. The daily reports included the patient's clinical status, the number of close contacts identified and treated, and results of laboratory tests. Effective communication helped to assure medical and line commanders that control measures had been successfully implemented, minimizing impact and preventing additional cases.

This case illustrates that the management of a patient with suspected bacterial meningitis in the shipboard setting may be handled efficiently despite limitations inherent to operational medicine. With prompt antibiotic therapy, respiratory isolation, identification and chemoprophylaxis of close contacts, and open communication channels between health care providers and public health officials, a favorable outcome may be achieved.

Table 1. Antibiotics and Costs of Chemoprophylaxis for *Neisseria meningitidis*

Antibiotic	Dose	Cost Per Course
Rifampin	600 mg PO bid for 4 doses	$3.92
Ciprofloxacin	500 mg PO once	$1.54
Ceftriaxone	250 mg IM once	$6.87

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Vaccine Adverse Event Reporting System (VAERS) Update

Table 1 displays the total Anthrax VAERS reports submitted by each service to the Army Medical Surveillance Activity through 27 June 2003 in support of the Anthrax Vaccine Immunization Program. Reactions are classified per DoD memo of 15 October 1999, Policy for Reporting Adverse Events Associated with the Anthrax Vaccine. Table 2 displays all VAERS reports, by vaccine type, submitted to NAVENVIRHLTHCEN through 26 June 2003. Reactions are classified using adverse event guidelines provided by the Centers for Disease Control and Prevention.

Table 1. Anthrax Vaccine Immunization Program VAERS Cumulative Data by Service
(28 Aug 1998 - 27 Jun 2003)

Classification					
Service	Local Reaction			Systemic Reaction	Cum. Totals
	Mild	Moderate	Severe		
USA	22	28	13	79	142
USN	8	15	11	62	96
USAF	33	72	40	387	532
USMC	1	13	3	20	37
USCG	0	1	0	0	1

Table 2. Navy VAERS Cumulative Data by Vaccine Type
(01 Dec 2002 - 26 Jun 2003)

Vaccination/Event	Classification*		
	Serious	Non-serious	Cum. Totals
Anthrax	1	28	29
Smallpox	5	88	93
Anthrax + Smallpox	3	8	11
Other	0	4	4
Cum. Totals	9	128	137

* CDC defines serious adverse events as death, life-threatening illness, hospitalization or prolongation of hospitalization, or permanent disability. A non-serious adverse event then includes any other adverse event reported (<http://www.cdc.gov/mmwr/preview/mmwrhtml/ss5201a1.htm>)

NAVAL DISEASE REPORTING SYSTEM (NDRS)

Summary of 2003 Data

Tables 1 and 2 display the Medical Event Reports (MERs) received at Navy Environmental Health Center (NEHC). Interested readers may calculate rates among Active Duty by dividing the

Table 1. ACTIVE DUTY Reportable Medical Events, Navy & Marine Corps, Case Frequencies, 1 Jan 30 - Jun 2003

Disease	Total	USN	USMC	Disease	Total	USN	USMC
Amebiasis*	0	0	0	Lyme Disease	3	0	3
Anthrax*	0	0	0	Malaria (specify type) *	2	2	0
Biological warfare agent exposure	0	0	0	Measles*	0	0	0
Bites, rabies vaccine & human rabies IG	10	3	7	Meningitis (aseptic, viral)	6	4	2
Bites, venomous animal	1	0	1	Meningitis (bacterial other than Meningococcus)	0	0	0
Botulism*	0	0	0	Meningococcal disease*	3	3	0
Brucellosis	0	0	0	Mumps	0	0	0
Campylobacteriosis*	3	2	1	Occupational exposure to blood borne pathogens	0	0	0
Carbon Monoxide poisoning*	0	0	0	Onchocerciasis	0	0	0
Chemical warfare agent exposure	0	0	0	Pertussis*	0	0	0
Chlamydia	979	682	297	Plague*	0	0	0
Cholera	0	0	0	Pneumococcal pneumonia	0	0	0
Coccidioidomycosis	3	2	1	Poliomyelitis*	0	0	0
Cold injuries	0	0	0	Psittacosis (Ornithosis)	0	0	0
Cryptosporidiosis*	1	1	0	Q Fever*	0	0	0
Cyclospora*	0	0	0	Rabies, clinical human*	0	0	0
Dengue fever*	0	0	0	Relapsing fever	0	0	0
Diphtheria	0	0	0	Rheumatic fever	1	0	1
E. Coli 0157:H7 infection*	0	0	0	Rift Valley fever	0	0	0
Ehrlichiosis	0	0	0	Rocky-Mountain Spotted Fever	0	0	0
Encephalitis*	0	0	0	Rubella*	0	0	0
Filariasis	0	0	0	Salmonellosis*	9	1	8
Giardiasis	3	3	0	Schistosomiasis	0	0	0
Gonorrhea	202	146	56	Shigellosis*	0	0	0
Haemophilus influenza, type b	0	0	0	Smallpox*	0	0	0
Hantavirus infection*	0	0	0	Streptococcal disease, Group A	2	0	2
Heat injuries	54	2	52	Syphilis	10	8	2
Hemorrhagic fever*	0	0	0	Tetanus	0	0	0
Hepatitis, A (acute, symptomatic only)	1	1	0	Toxic shock syndrome	0	0	0
Hepatitis, B (acute, symptomatic only)	2	1	1	Trichinosis	0	0	0
Hepatitis, C (acute, symptomatic only)	1	1	0	Trypanosomiasis	0	0	0
Influenza (confirmed)	1	0	1	Tuberculosis, pulmonary active*	2	2	0
Lead poisoning	0	0	0	Tularemia*	0	0	0
Legionellosis*	0	0	0	Typhoid fever*	0	0	0
Leishmaniasis	0	0	0	Typhus*	0	0	0
Leprosy (Hansen's disease)	0	0	0	Urethritis (non gonococcal)	52	20	32
Leptospirosis*	0	0	0	Varicella	3	3	0
Listeriosis	0	0	0	Yellow fever	0	0	0

* Reportable with 24 hours

Data in the NMSR are provisional, based on reports and other sources of data available to the Navy Environmental Health Center. MERs are classified by date of report. Only cases submitted as confirmed are included.

frequencies by estimated mid-period strength of 382,811 for USN and 172,192 for USMC. Table 1 shows active duty only. Table 2 shows non-active duty beneficiaries.

Table 2. BENEFICIARIES Reportable Medical Events, Navy & Marine Corps, Case Frequencies, 1 Jan –30 Jun 2003

Disease	Total	USN	USMC	Disease	Total	USN	USMC
Amebiasis*	0	0	0	Lyme Disease	0	0	0
Anthrax*	0	0	0	Malaria (specify type) *	0	0	0
Biological warfare agent exposure	0	0	0	Measles*	0	0	0
Bites, rabies vaccine & human rabies IG	33	13	20	Meningitis (aseptic, viral)	17	16	1
Bites, venomous animal	0	0	0	Meningitis (bacterial other than Meningococcus)	1	1	0
Botulism*	0	0	0	Meningococcal disease*	1	1	0
Brucellosis	0	0	0	Mumps	0	0	0
Campylobacteriosis*	1	1	0	Occupational exposure to blood borne pathogens	0	0	0
Carbon Monoxide poisoning*	0	0	0	Onchocerciasis	0	0	0
Chemical warfare agent exposure	0	0	0	Pertussis*	5	5	0
Chlamydia	386	260	126	Plague*	0	0	0
Cholera	0	0	0	Pneumococcal pneumonia	7	6	1
Coccidioidomycosis	1	1	0	Poliomyelitis*	0	0	0
Cold injuries	0	0	0	Psittacosis (Ornithosis)	0	0	0
Cryptosporidiosis*	0	0	0	Q Fever*	0	0	0
Cyclospora*	0	0	0	Rabies, clinical human*	0	0	0
Dengue fever*	0	0	0	Relapsing fever	0	0	0
Diphtheria	0	0	0	Rift Valley fever	0	0	0
E. Coli 0157:H7 infection*	1	1	0	Rocky-Mountain Spotted Fever	0	0	0
Ehrlichiosis	0	0	0	Rubella*	0	0	0
Encephalitis*	0	0	0	Salmonellosis*	19	16	3
Filariasis	0	0	0	Schistosomiasis	0	0	0
Giardiasis	5	4	1	Shigellosis*	19	15	4
Gonorrhea	40	37	3	Smallpox*	0	0	0
Haemophilus influenza, type b	1	1	0	Streptococcal disease, Group A	1	1	0
Hantavirus infection*	0	0	0	Syphilis	3	2	1
Heat injuries	0	0	0	Tetanus	0	0	0
Hemorrhagic fever*	0	0	0	Toxic shock syndrome	0	0	0
Hepatitis, A (acute, symptomatic only)	0	0	0	Trichinosis	0	0	0
Hepatitis, B (acute, symptomatic only)	1	1	0	Trypanosomiasis	0	0	0
Hepatitis, C (acute, symptomatic only)	1	1	0	Tuberculosis, pulmonary active*	0	0	0
Influenza (confirmed)	2	2	0	Tularemia*	0	0	0
Lead poisoning	0	0	0	Typhoid fever*	0	0	0
Legionellosis*	0	0	0	Typhus*	0	0	0
Leishmaniasis	0	0	0	Urethritis (non gonococcal)	0	0	0
Leprosy (Hansen's disease)	0	0	0	Yellow fever*	0	0	0
Leptospirosis*	0	0	0				
Listeriosis	0	0	0				

* Reportable with 24 hours

Hospitalizations Due To Musculoskeletal Conditions In Active Duty Navy Personnel FY 1998 - 2002

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Introduction

Musculoskeletal conditions are a significant health problem in the military population. Specifically, musculoskeletal conditions requiring hospitalization have a profound impact on troop readiness.[1] This descriptive study describes the occurrence of musculoskeletal-related hospitalizations among Active Duty (AD) Navy personnel. The findings of this study will hopefully shed light on the burden of musculoskeletal conditions in the Navy.

Methods

The primary data source was the Military Healthcare System (MHS) Management Analysis and Reporting Tool (also known as M2). M2 is used to query an electronic database, maintained by the Executive Information and Decision Support (EI/DS) program office, containing the Standardized Inpatient Data Record (SIDR). SIDR has inpatient hospitalization records for military personnel hospitalized in any military medical treatment facility (MTF). Denominator data was obtained using the Washington Headquarters Service rates for total AD personnel in the Navy.[2]

This study included any AD Navy personnel aged 17 to 65 years old who was hospitalized in a military MTF from Fiscal Year (FY) 1998 - 2002 with an inpatient diagnosis related to musculoskeletal conditions. Musculoskeletal conditions were defined as those records with: (1) an ICD-9 (International Classification of Diseases, Version 9) code of 710.00 - 739.99 for any of the 8 ICD-9 codes listed in the SIDR record, and (2) a recorded Diagnostic Related Group (DRG) related to musculoskeletal causes. In an effort to better depict the burden of musculoskeletal conditions on the MHS, if an individual had more than one musculoskeletal ICD-9 code during one hospitalization, all of the musculoskeletal diagnoses were counted. Finally, if an individual had multiple hospitalizations for the same or different musculoskeletal disorder, each hospitalization was counted.

Results

The total number of ICD-9 diagnoses for musculoskeletal conditions among AD Navy has steadily declined from FY 1998 to FY 2002 (Figure 1). The top ten musculoskeletal diagnoses accounted for approximately 80% of the total number of inpatient musculoskeletal diagnoses. Over 50% of musculoskeletal hospitalizations were due to three conditions: internal derangement of the knee (25%), intervertebral disk disease (17%), and other joint derangement (10%) (Table 1).

Based on this data, age appears to be related to the number of musculoskeletal-related hospitalizations (Figure 2). The number of musculoskeletal conditions peaked at two distinct age groups: ages 17-25 and ages 34-42. In the younger age group (17-25 year old) the leading musculoskeletal conditions were knee and joint disorders (Figure 3). In the older age group (34-42 years old), the predominant diagnoses were intervertebral and knee disorders (Figure 4).

Further analysis revealed that a larger number of inpatient musculoskeletal diagnoses occurred among the E-4 to E-6 population (Figure 5). Figure 5 also revealed the rate of musculoskeletal diagnoses increased as age increased (using rank as a proxy for age).

Figure 1.

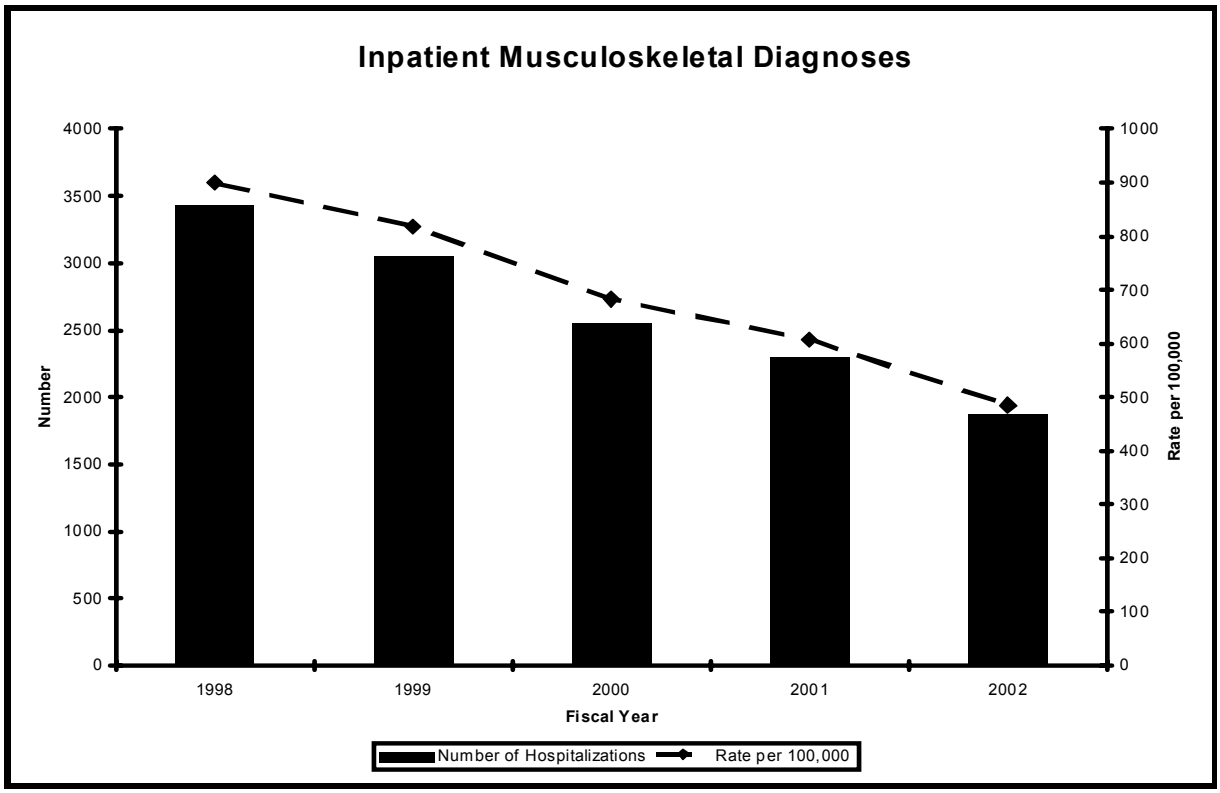


Table 1. Top Musculoskeletal Diagnoses

Rank	Condition	%
1	Internal derangement of the knee	24%
2	Invertebral disc disorders	17%
3	Other joint derangement	10%
4	Other bone and cartilage disorders	6%
4	Back disorder nec and nos	6%
	All others	37%

Figure 2.

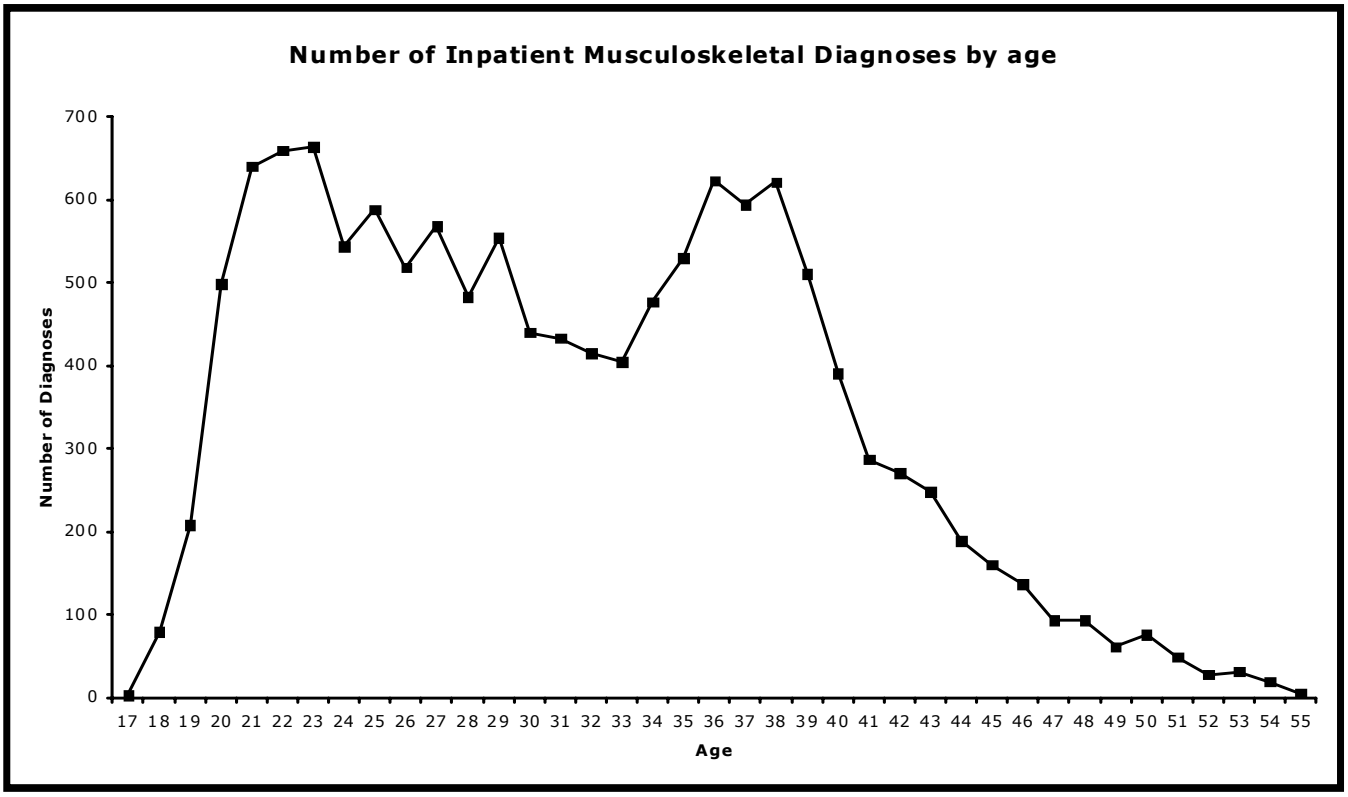


Figure 3.

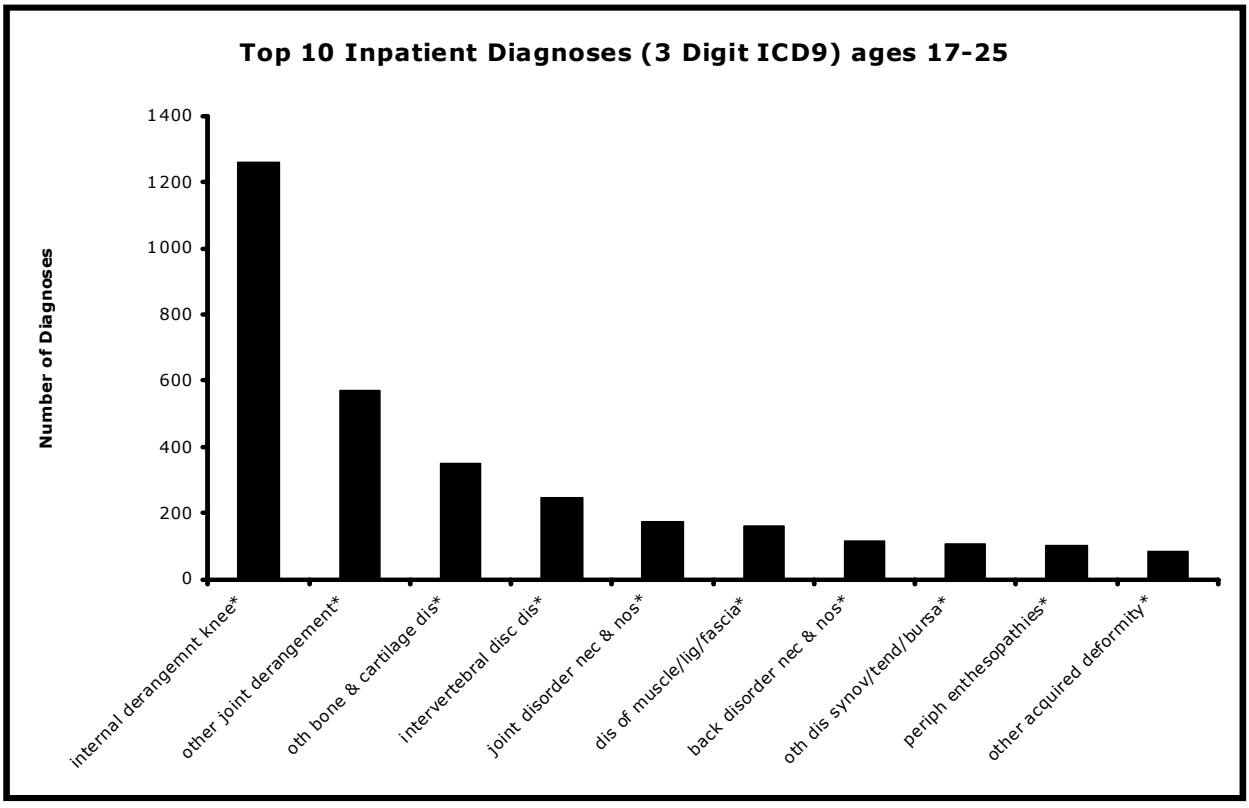


Figure 4.

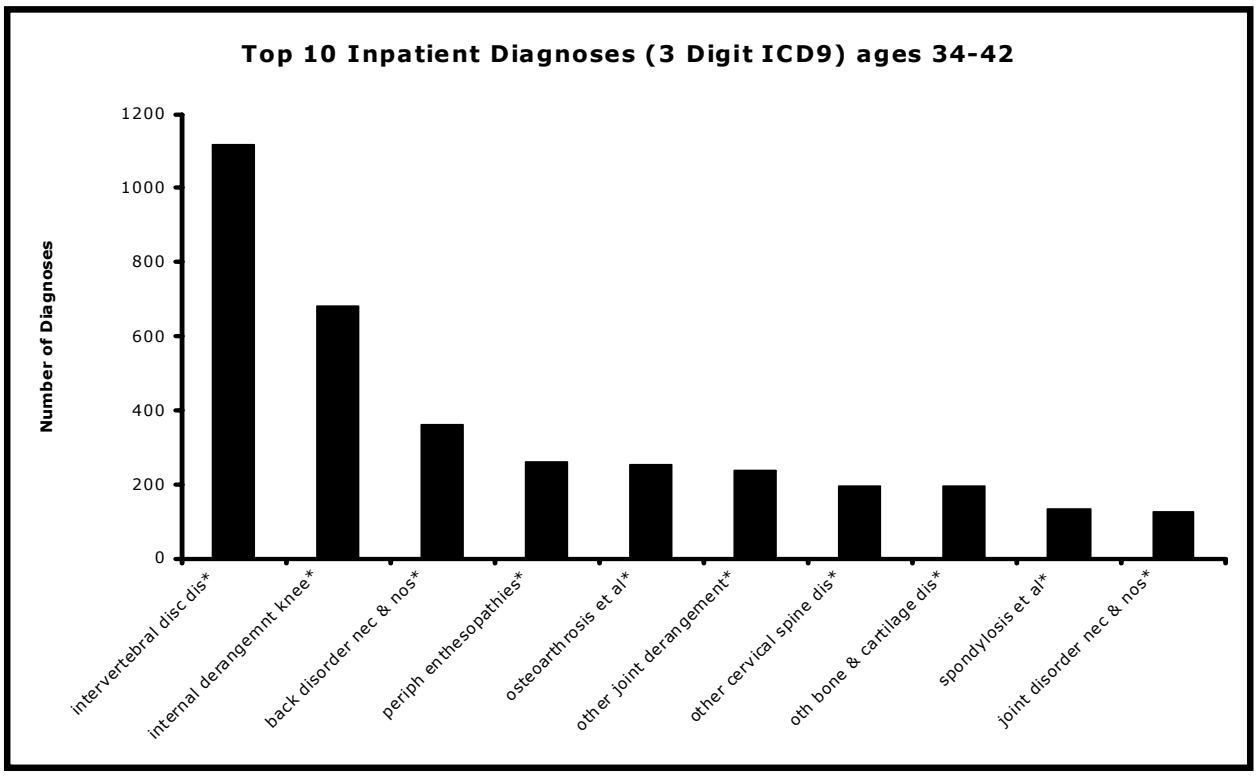
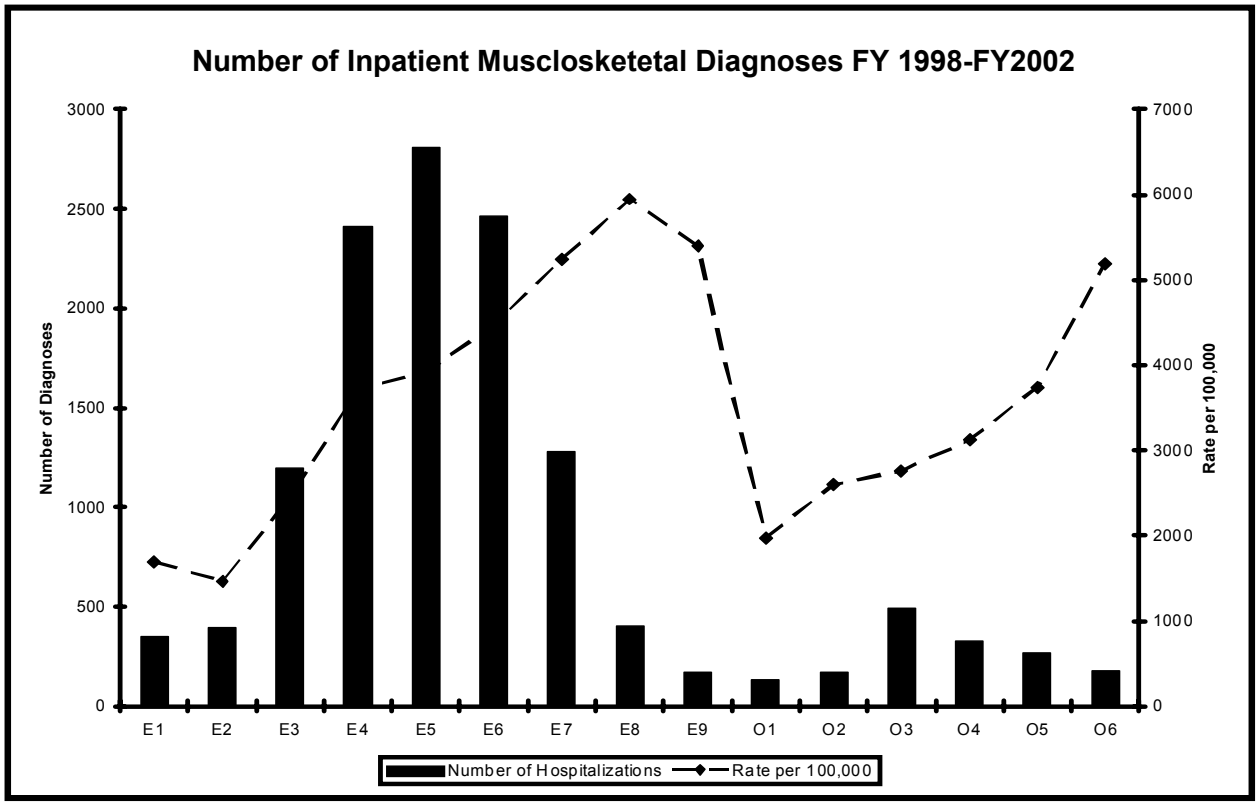


Figure 5.



Discussion

Musculoskeletal conditions are a significant source of AD Navy inpatient hospitalizations at Military Treatment Facilities throughout the MHS. Smith *et al* indicated that musculoskeletal injuries are costly and impact troop readiness.[3] This study supports those conclusions. Results show that a disproportionate number of musculoskeletal diagnoses occur among the E4 to E6 population which represents a significant portion of fully trained Navy personnel. As such, these individuals' lost duty time and potential medical discharge secondary to musculoskeletal diagnoses may have a lasting impact on military readiness.

This study is an important first step in classifying the burden of musculoskeletal injuries in the AD Navy population. It has limitations that include the lack of true incidence rates, not including fractures in the study population, inability to include military personnel hospitalized in civilian facilities, inaccurate coding, lack of injury causality data, and incomparable rates with the civilian population.

Additional studies (comparative studies with other military branches and the civilian population, trend analyses, and reports on causality) should be performed to help characterize further musculoskeletal conditions in the Navy population.

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1. Sleet D, Jones B, Amoroso P. Military Injuries and Public Health: An Introduction. Am J Prev Med 2000 18(3S): 1-4.

2. Washington Headquarters Services, http:// web1. whs.osd.mil/mmid/military/ miltop.html, 2002.

3. Smith G, Dannenberg A, Amoroso P. Hospitalization Due to Injuries in the Military: Evaluation of Current Data and Recommendations on Their Use for Injury Prevention. Am J Prev Med 2000 18(3S): 1-4.

Navy Medicine Annual Tuberculosis Report Calendar Year 2002

HM2 (SW) Collin Bowman USN, Navy Environmental Health Center, Portsmouth, VA

Per BUMEDINST 6224.8, activities with medical department personnel and ships of the Military Sealift Command shall prepare an annual tuberculosis screening summary report, and submit to the cognizant NEPMU (Navy Environmental and Preventive Medicine Unit) by 01 February the following year. The NEPMU's collect and analyze the data, and in turn forward the reports to NEHC (Navy Environmental Health Center) by 15 April. This is separate from the urgent reporting of suspected and confirmed cases of tuberculosis disease, which are reportable conditions, and require submission of Medical Event Reports via NDRS (Navy Disease Reporting System) according to BUMEDINST 6220.12A.

Tables 1-6 summarize CY 2002, showing breakdowns by Service, NEPMU's, Carriers, Amphib's, select USMC units, and Medical Treatment Facilities (MTF's). Finally, Figure 1 presents active Tuberculosis case rates for Navy and Marine Corps from 1988 to 2002.

Table 1. Summary of Reported Unit Strengths vs. Directorate for Information Operations and Reports (DIOR) CY 2002 Military statistics

	Total Personnel CY-02	Number personnel reported	Reported %
USN	384,674	338,215	87.92
USMC	174,356	140,588	80.63

Table 2. Summary of 2002 Reports by NEPMU's

SHIP/Station	Total Personnel reported	% Tested*	New Reactors Identified	TST Conversion Rate (%)	Active Cases
NEPMU2	279,373	72.74	3,516	1.76	5
NEPMU5	124,356	66.27	1018	1.29	5
NEPMU6	54,343	57.22	335	1.12	0
NEPMU7	16,479	36.48	117	2.01	0
TOTAL	474,803	68.05	4,798	1.58	10

Table 3. Details of 2002 Reports received from Aircraft Carriers

SHIP	% Tested*	New Reactors Identified	TST Conversion Rate (%)	Active Cases
USS ABRAHAM LINCOLN (CVN 72)	100	2	0.07	0
USS CARL VINSON (CVN 70)	138.15	30	0.78	0
USS CONSTELLATION (CV 64)	77.85	9	0.40	0
USS DWIGHT D EISENHOWER (CVN 69)	94.34	3	0.11	0
USS ENTERPRISE (CVN 65)	98.00	8	0.26	0
USS GEORGE WASHINGTON (CVN 73)	DID NOT REPORT			
USS HARRY S. TRUMAN (CVN 75)	100.00	7	0.23	0
USS JOHN C STENNIS (CVN 74)	DID NOT REPORT			
USS JOHN F. KENNEDY (CV 67)	97.62	79	3.05	0
USS KITTY HAWK (CV 63)	111.24	17	0.54	0
USS NIMITZ (CVN 68)	71.89	30	1.36	0
USS RONALD REAGAN (CVN 76) - PCU	64.33	25	1.48	0
USS THEODORE ROOSEVELT (CVN 71)	68.86	12	0.58	0
TOTAL	92.81	222	0.75	0

* Percentages may reflect retesting as a result of identified suspect TB cases.

Table 4. Details of 2002 Reports received from Large Deck Amphibious Vessels

SHIP	% Tested*	New Reactors Identified	TST Conversion Rate (%)	Active Cases
USS AUSTIN (LPD 4)	95.91	2	.61	0
USS BATAAN (LHD 5)	105.08	13	1.23	0
USS BELLEAU WOOD (LHA 3)	69.93	14	1.90	0
USS BON HOMME RICHARD (LHD 6)	89.83	12	1.11	0
USS BLUERIDGE (LCC 19)	97.40	4	0.63	0
USS BOXER (LHD 4)				DID NOT REPORT
USS DENVER (LPD 9)	100.00	6	1.72	0
USS CARTER HALL (LSD 50)	98.74	4	1.28	0
USS COMSTOCK (LSD 45)	109.44	2	0.64	0
USS CLEVELAND (LPD 9)	99.71	2	0.59	0
USS DUBUQUE (LPD 8)	90.14	7	2.19	0
USS DULUTH (LPD 6)	96.46	47	14.37	0
USS ESSEX (LHD 2)	82.39	1	0.11	0
USS FORT MCHENRY (LSD 43)				DID NOT REPORT
USS GERMANTOWN (LSD 42)	97.76	7	2.30	0
USS GUNSTON HALL (LSD 44)	100.00	2	0.73	0
USS HARPERS FERRY (LSD 49)	99.34	2	0.67	0
USS IWO JIMA (LHD 7)	84.26	6	0.64	0
USS JUNEAU (LPD 10)				DID NOT REPORT
USS KEARSARGE (LHD 3)	103.66	91	6.98	0
USS MOUNT VERNON (LSD 39)	97.70	6	2.35	0
USS MOUNT WHITNEY (LCC 20)				DID NOT REPORT
USS NASHVILLE (LPD 13)	86.74	4	1.27	0
USS NASSAU (LHA 4)	68.73	7	1.00	0
USS OAK HILL (LSD 51)	101.32	0	0.00	0
USS OGDEN (LPD 5)	94.41	7	2.30	0
USS PEARL HARBOR (LSD 52)	98.23	5	1.80	0
USS PELELIU (LHA 5)	166.80	7	0.43	0
USS PONCE (LPD 15)				DID NOT REPORT
USS RUSHMORE (LSD 47)	98.91	3	1.10	0
USS SAIPAN (LHA 2)	99.89	3	0.33	0
USS SHREVEPORT (LPD 12)	100.00	0	0.00	0
USS TARAWA (LHA 1)	81.66	0	0.00	0
USS TORTUGA (LSD 46)	100.00	7	2.36	0
USS TRENTON (LPD -14)	86.86	2	0.62	0
USS WASP (LHD 1)	104.28	2	0.18	0
USS WHITBEY ISLAND (LSD 41)				DID NOT REPORT
TOTAL	96.18	275	1.56	0

* Percentages may reflect retesting as a result of identified suspect TB cases.

Table 5. Details of 2002 Reports received from Reporting Marine Corps Units

COMMAND REPORTING	% Tested*	New Reactors Identified	TST Conversion Rate (%)	Active Cases
2ND FSSG, NC	43.80	56	1.68	0
2ND MARDIV, NC	38.33	59	0.94	0
2ND MAW, CHERRY POINT, NC	87.34	152	1.20	0
2ND MAW, NEW RIVER, NC	99.03	60	1.55	0
BMC MCRD PARRIS ISLAND, SC	97.75	148	0.48	0
BMC QUANTICO VA	58.75	37	0.71	0
CBR UNIT II MEF	100.00	0	0.00	0
NH BEAUFORT, SC (MCRD)	55.65	6	0.63	0
NH BEAUFORT, SC (RECRUITS)	100.19	142	0.48	0
NH CAMP LEJEUNE, NC	60.32	50	1.82	0
NH CHARLESTON, SC	1091.33	383	11.70	1
NH CHERRY POINT, NC	112.84	45	2.64	0
UNITAS, II MEF	98.03	1	0.33	0
BMC 31 EDSON RANGE	30.26	5	0.52	0
BMC MIRIMAR, MCAS	33.47	40	2.00	0
BMC INFANTRY (SOI) CAMP PENDLETON	82.81	15	1.53	0
3RD MAW	82.00	5	0.88	0
1st BATTALION 12th MARINES	99.79	1	0.21	0
COMBAT SUPPORT COMPANY 3rd MARINES	103.29	0	0.00	0
1ST BATTALION 3RD MARINES	99.42	5	0.59	0
3RD BATTALION 3RD MARINES	99.45	4	0.55	0
HQ COMPANY 3RD MARINES	100.00	4	1.28	0
1ST MAW (PSD-17)	86.05	0	0.00	0
1ST MAW (MWSS-172)	87.37	0	0.00	0
1ST MAW (MAG-36)	100.00	0	0.00	0
1ST MAW (MWHS-1)	97.44	7	2.30	0
1ST MAW (MWSG-17)	87.23	0	0.00	0
MARINE AIR GROUP 13 YUMA, AZ	42.67	24	2.19	0
TOTAL	79.75	1249	1.12	1

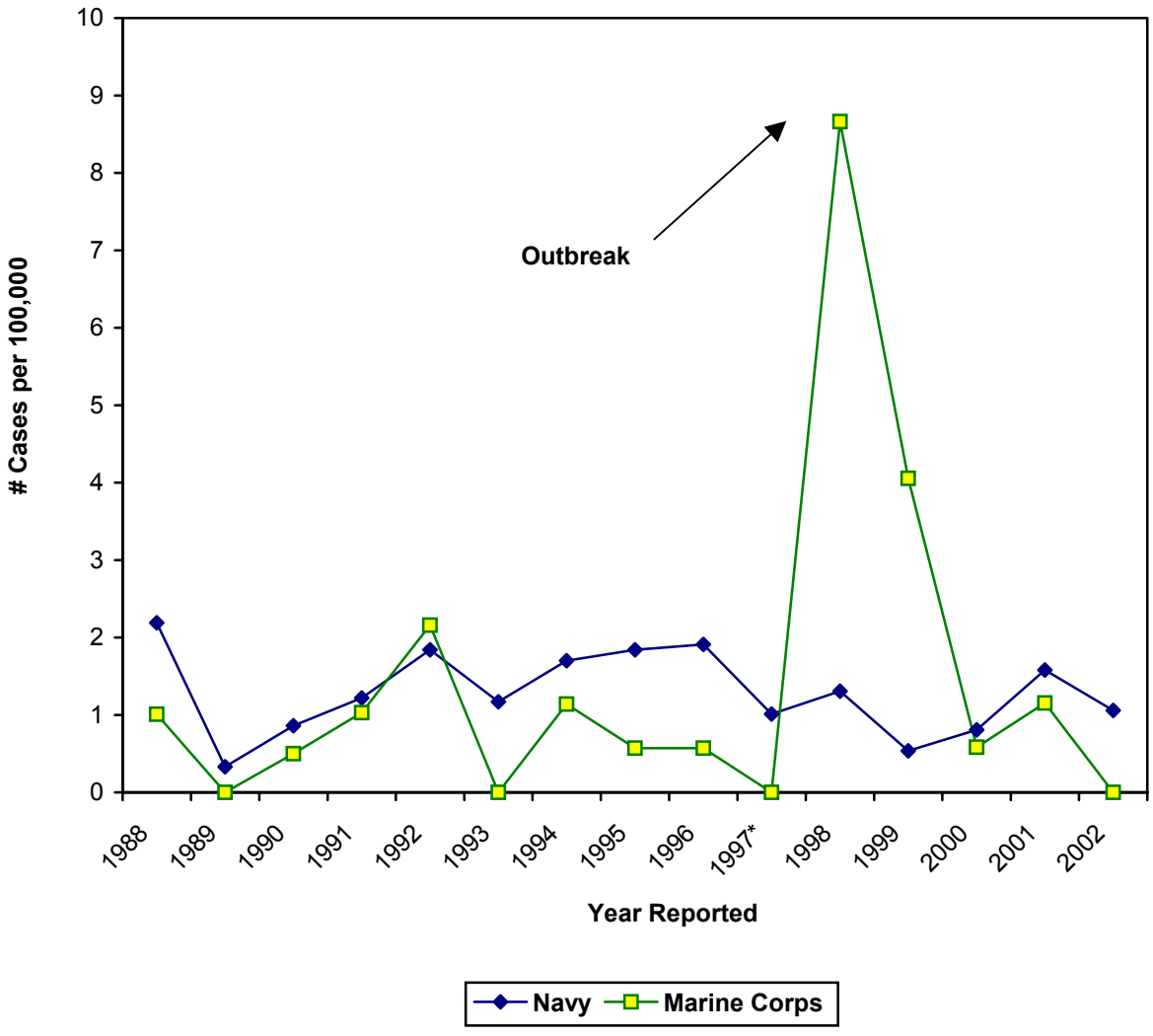
* Percentages may reflect retesting as a result of identified suspect TB cases.

Table 6. Details of 2002 Reports received from Major MTF's Navy Wide

COMMAND REPORTING	% Tested*	New Reactors Identified	TST Conversion Rate (%)	Active Cases
NAVMEDCNTR PORTSMOUTH, VA	46.65	22	1.25	2
NAVMEDCNTR SAN DIEGO	33.54	7	0.48	5
NAVHOSP BEAUFORT, SC (MCRD)	55.65	6	0.63	0
NAVHOSP BEAUFORT, SC (RECRUITS)	100.19	142	0.48	0
NAVHOSP BREMERTON	656.04	90	1.33	0
NAVHOSP CAMP LEJEUNE, NC	60.32	50	1.82	0
NAVHOSP CAMP PENDLETON	79.26	16	0.50	0
NAVHOSP CHARLESTON, SC	1091.33	383	11.70	1
NAVHOSP CHERRY POINT, NC	112.84	45	2.64	0
NAVHOSP CORPUS CHRISTI, TX	185.70	42	1.72	0
NAVHOSP JACKSONVILLE, FL	56.08	67	1.23	0
NAVHOSP KEFLAVIK, ICELAND	61.16	67	9.23	0
NAVHOSP LEMOORE	105.38	22	0.99	0
NAVHOSP OAK HARBOR	22.92	45	1.98	0
NAVHOSP PENSACOLA, FL	17.70	19	0.65	2
NAVHOSP ROOSEVELT ROADS	60.29	3	0.15	0
NAVHOSP TWENTY NINE PALMS	4.14	10	0.00	0
NAVHOSP, GREAT LAKES	42.60	21	0.93	0
NMC PEARL HARBOR	27.58	85	1.37	0
NNMC BETHESDA, MD	108.30	38	0.87	0
USNH GUAM	99.32	8	0.69	0
USNH NAPLES, ITALY	41.53	25	1.92	0
USNH OKINAWA	100.00	0	0	0
USNH ROTA, SPAIN	94.83	26	1.17	0
USNH SIGONELLA, ITALY	18.39	9	1.48	0
USNH YOKOSUKA	18.57	0	0	0
TOTAL	60.29	1248	1.45	10

* Percentages may reflect retesting as a result of identified suspect TB cases.

Figure 1. Navy and Marine Corps Active Tuberculosis Case Rate, 1988-2002



*1997 Naval Disease Reporting System (NDRS) was instituted. Previous data was collected from past NMSR issues.

Abstract: Lost Duty Time in the Navy and Marine Corps

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Editor's Note: Abstract to be presented at the Sixth Annual Force Health Protection Conference, Oral Presentation.

Background

Lost duty days for active duty Navy and Marine Corps personnel is an important metric of force health protection and readiness. Although there is a growing body of literature regarding lost duty time due to injuries, there remains a gap in our knowledge of lost and light duty resulting from all medical causes in the Navy and Marine Corps. Current challenges include poor knowledge of existing data sources and information pertaining to lost duty time. Data sources are being identified and analyzed to evaluate their strengths and weaknesses and better define what information each can contribute to the overall picture of lost duty time.

Methods

Several data sources have been identified, including Standard Inpatient Data Records (SIDR) and Standard Ambulatory Data Records (SADR), and the Naval Safety Center data. SIDR and SADR data are ICD-9-CM coded inpatient and outpatient visits, respectively. Naval Safety Center data has BLS coded occupational injuries or illnesses. Other data systems, such as the Composite Health Care System II, may also provide some epidemiological capability for this analysis.

Results

Initial analysis of the SIDR and SADR data found the leading causes of hospitalizations for Navy and Marines were injury and poisoning, mental disorders, and complications of pregnancy. For days in quarters, the leading categories were respiratory, infectious diseases, and gastrointestinal. For light duty status, the leading causes were musculoskeletal, injury and poisoning, and other contact with health care services. We are continuing this analysis with Naval Safety Center information. Several limitations have been noted: SIDR datasets can only approximate lost duty days, while SADR can only provide classifications of visits and not actual days. Additionally, these two datasets reflect what is seen in shore facilities as opposed to operational settings.

Conclusions

The existing lost duty information sources can contribute to the assessment of force readiness. The comprehensiveness and comparability of this picture remains to be determined and wants continuing analysis.

Abstract: Tuberculosis in the U.S. Navy and Marine Corps: A 3-Year Retrospective Analysis 2000-2002

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Editor's Note: Abstract to be presented at the Sixth Annual Force Health Protection Conference, Poster Presentation.

Background

Tuberculosis (TB) continues to be a serious public health issue impacting force health protection. Surveillance and prevention play a vital role in increasing readiness and maintaining health. The US Navy and USMC are in a unique position set by their working conditions including closed air systems, closed populations, and a significant amount of travel overseas. Thus, active duty Navy and Marine Corp personnel undergo TB screening and surveillance. This poster is designed to provide a descriptive/informational view of TB among active duty Navy and Marine Corps members.

Methods

The data source for this analysis is the 2000 - 2002 summary TB reports. Counts of active cases of TB were extracted from the Navy Disease Reporting System. Statistical analyses were used to evaluate differences in tuberculin skin test conversion rates for the various duty stations. Finally, reporting percentages will be compared against unit strength counts to determine actual compliance percentages. Outcome variables under investigation are TB reporting rates, active TB cases, and annual TB incidence and prevalence rates.

Results

There were 349,202 active duty personnel screened and were 4,191 new reactors. In 2000, 5 cases of active TB were reported, 2001 reported 11 cases, and 2002 reported 7 cases. PPD conversion rates ranged from 1.07% to 2.00%. Data for the presentation will be analyzed to determine odds ratios of PPD conversions for shore versus sea units. Analysis of compliance with PPD screening is expected to approach 75%.

Conclusions

The data indicates that tuberculosis has a considerable impact on the health and readiness of Navy and Marine Corps personnel. Furthermore, data is expected to indicate good compliance with PPD screening among reporting commands.

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